The current state of work on electrode erosion and on processes at electrodes in a vacuum and at atmospheric pressure, in the presence of a magnetic field and without it, was illuminated in the review report of K. Kimblin (USA).

B. Bolanovski (PPR) dwelt on an impulse model of the cathode zone of an electric zone.

The reports to the section on "Arc plasma diagnostics" were divided into three main groups: questions of nonequilibrium and diagnostics of a nonequilibrium plasma; the improvement of diagnostic methods and new procedures; diagnostic apparatus.

Reports of W. Rother, W. Neumann (GDR), C. R. James (Canada), and J. Uhlenbusch (FRG) devoted to methods of plasma diagnostics, probe-type and optical, and their results were heard in the section.

A section on power sources operated for the first time at the Conference on Low-Temperature Plasma Generators. Direct-current power sources and new developments were discussed here: control of the parameters and processes in a plasma medium, separate power-source constructions, and auxiliary devices (M. E. Zarudi, P. I. Tamkivi, A. S. Markus, V. M. Egorov, and others).

In the conference resolution adopted at the concluding plenary session notice was taken of the principle directions in the creation of low-temperature plasma generators and emphasis was placed on the necessity of expanding work on processes near electrodes, electric arcs under complicated conditions, plasma diagnostics, the stability of the electric-discharge–power-source system, and coordination of the research on low-temperature plasma generators. The next conference on this problem was planned to be held in 1980.

RESOLUTION OF THE SECOND ALL-UNION CONFERENCE ON THE MECHANICS OF ANOMALOUS SYSTEMS

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The Second All-Union Conference on the Mechanics of Anomalous Systems, convened by the Academies of Sciences of the USSR and the Azerbaidzhan SSR, the Ministry of Higher and Secondary Special Education (MVSSO) of the USSR, the MVSSO of the Azerbaidzhan SSR, and the M. Azizbekov Azerbaidzhan Institute of Petrochemistry, met at Baku on September 26-28, 1977.

A total of 203 people took part in the work of the conference. The program of the conference included 99 reports in two sections: "The rheology and fluid dynamics of anomalous systems" and "Transfer processes. The motion of anomalous fluids in porous media. Application."

Principal attention was paid to the theoretical fluid dynamics of anomalous systems; the rheology of viscoelastic liquids; filtration theory for anomalous systems; the control of hydrodynamic characteristics using physical fields and admixtures; transfer processes in anomalous systems.

It was noted that over the period which has passed since the First Conference on the Mechanics of Anomalous Systems (Baku, 1969) the range of the research has expanded considerably and interest has grown in the fluid dynamics of viscoelastic systems and in new hydrodynamic methods of studying such systems; transfer processes and methods of controlling the flow and rheology of a fluid using physical fields are being studied intensively; efficient methods have been developed for calculating filtration flows of anomalous fluids. Nonequilibrium processes during filtration are being widely studied and their foundation within the framework of the theory of relaxing media is being developed. Numerical methods are being developed for the fluid dynamics of anomalous systems. A number of studies are directly connected with practical applications.

At the same time, it was noted at the conference that, as before, the required coordination between theoretical and experimental research is absent. Composite reports in which the theoretical research is conducted on a unified program with experimental research are rarely encountered. The coordination of the work carried ried out at different institutions of the country is inadequate. A number of experimentally observed phenomena

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do not have their proper theoretical generalization. Many theoretical reports, especially those devoted to the calculation of complex flows of anomalous systems, operate with models for which the selection and the parameters do not have the proper experimental and physical justification.

The hydrodynamic fields in streams which differ from viscosimetric streams, when anomalous systems can yield qualitatively new effects, are being studied little.

Laborious work on the determination of the rheological characteristics of anomalous systems is being carried out disconnectedly, and as a result, standard methods and reference systems with a reliably established rheological description are absent and the development of both theoretical methods and measuring apparatus is hindered.

The conference considers it desirable to intensify research in the following directions:

the theory of the description of anomalous systems, including thixotropic and relaxing systems; expansion of the range of hydrodynamic methods used for their study; enlistment of identification methods in the choice of a description of concrete systems;

establishment of standard methods for the study of anomalous systems and for the development of the appropriate complex of apparatus;

theoretical studies of the mechanisms for controlling rheological characteristics using physical fields and various chemical admixtures, and studies of the physical mechanism and the micromechanics of the motion of anomalous fluids in porous solids using different model porous media;

introduction of the results of the developments into industry.

Considering the practical importance of the mechanics of anomalous systems and the intensity of the research in this field, the conference thinks it desirable to:

1) request the Academy of Sciences of the USSR to authorize the publication of an All-Union Journal on the mechanics of anomalous systems (Academy of Sciences of the Azerbaidzhan SSR and M. Azizbekova Azerbaidzhan Institute of Petrochemistry) with a periodicity of six issues per year;

2) convene the following Third All-Union Conference on the Mechanics of Anomalous Systems at Baku in 1981 (M. Azizbekova Azerbaidzhan Institute of Petrochemistry);

3) request the Academy of Sciences of the USSR to enlist the Special Design Office of Analytical Instrument Making, Academy of Sciences of the USSR, in the creation, on the basis of existing individual developments, of a complex of instruments for rheological research on anomalous systems with the aim of satisfying the demands of both scientific-research institutions and industrial enterprises.